

- **Department Name :- Mechanical Engineering**
- **UG Program Name :- M.Tech. Mechanical-(Production Engineering)**
- **Vision and Mission :-**

Vision:

To be a centre of excellence in the field of Mechanical Engineering where quality education and research synergize.

Mission:

To transform the students of the department into highly motivated and cultured engineers, technologists, researchers and entrepreneurs who will contribute to uplift the society in collaboration with industry and academia.

Sr. No.	Program Outcomes
1.	Apply subject knowledge acquired in mathematics, science, engineering and humanities to solve Mechanical engineering problems. (GA :Scholarship of Knowledge)
2.	Provide intellectually advanced solutions to complex Mechanical engineering problems through critical analysis. (GA : Critical Thinking, Problem Solving)
3.	Formulate and solve Mechanical engineering problems to bring an optimal innovative solution within realistic constraints and sustainable environment. (GA: Critical Thinking, Problem Solving)
4.	Contribute to development of scientific knowledge in various domains by applying appropriate research methodologies. (GA: Critical Thinking, Problem Solving , Research Skill)
5.	Create, select, learn and apply appropriate techniques, resources and modern engineering and IT tools to solve Mechanical engineering and business problems (GA: Problem Solving, Usage of Modern Tools)
6.	Contribute towards common goals by demonstrating multidisciplinary skills, team work, rational thinking and democratic decision making skills (Collaborative and Multidisciplinary)
7.	Apply knowledge of engineering and management principles to an individual/group task as a member, or leader within feasibility constraints of project. (GA: Project Management and Finance, Independent and Reflective Learning)
8.	Communicate confidently and effectively regarding complex engineering activities with scientific community and society. (GA: Communication, Ethical Practices and Social Responsibility)
9.	Engage in lifelong learning with a high level of enthusiasm and commitment. (GA: Life Long Learning)
10.	Acquire professional and intellectual integrity, professional code of conduct, and ethic of research and understanding of responsibility to contribute for sustainable development of society (GA: Ethical Practices and Social Responsibility)
11.	Solve contemporary issues through independent and reflective learning. (GA: Independent and Reflective Learning)

2018-19

Semester	Course Name	Course Code	Course Outcome
Semester-I	Advanced Mathematical Methods in Engineering	SHP 513	Evaluate Fourier series and Fourier Transforms for given function and apply it to solve the partial differential equations in Engineering problems.
			Apply the specific method of solution of partial differential equations for solving the given problems
			Formulate and solve a boundary value problem (Partial differential equation, boundary.
			Use the relevant method for solving the simultaneous linear equations and compute the Eigen values.
			Estimate numerically the solution of given algebraic equation.
			Analyze the variance and explain the different research designs.
	Casting and Welding Technology	MPD1013	Design gating & Riser system for casting products.
			Select the proper advanced casting method.
			Develop plastic shaping process for new product.
			Select suitable manufacturing method for glass & rubber.
			Use of simulation software for analysis
	Advanced Manufacturing Systems	MPD1023	Identify the challenges of manufacturing systems
			Develop & implement Flexible Manufacturing System.
			Interpret the Computer Integrated Manufacturing Systems and Reconfigurable Manufacturing Systems.
			Use lean tools to improve performance of manufacturing systems.
			Use AI in system design.
	Mechatronics System Design for Manufacturing	MPD1053	Demonstrate the method and importance of integration of Mechanical, Electronics and Control in the design of Mechatronics system.
			Select key elements of sensors and transducers and interfacing the same with problem under consideration through PLC.
			Apply basic knowledge of microprocessor and interface it with computer for real life applications in manufacturing.

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	Advanced Machine Tool Design	MPD1063	Design basic structural components of machine tool.	
			Design drives system of different machine tools.	
			Select various components for building CNC machine tools. Apply standard testing procedure for machine tools.	
			Apply aesthetic and ergonomic considerations in design of machine tools.	
	Technical Communication	SHP551	Acquire skills required for good oral and written communication	
			Demonstrate improved writing and reading skills	
			Ensure the good quality of oral and written communication	
	Software Proficiency-I	MPD1093	Develop/ select appropriate orientation of the casting & parting plane	
			Calculate modulus of the casting & number of cavities in the mould.	
			Calculation of riser & gating system design. Calculating the yield of the casting.	
	Manufacturing Simulation Lab	MPD1103	Demonstrate the broad applicability of discrete-event simulation to solve complex manufacturing systems problems	
			Apply the essential steps of the simulation methodology	
			Learn to use the WITNESS 13/Arena Simulation Software Tool to build credible valid simulation models, design and run simulation experiments, and critically evaluate decision-support simulation results.	
			Learn analytical techniques for interpreting input data and output results pertinent to simulation models.	
			Gain insight into system behavior by measuring the performance characteristics of proposed new manufacturing system or the impact of proposed changes for existing manufacturing system.	
	Semester-II	Advanced Metal Forming	MPD2013	Classify and compare different forming processes
	Explain fundamentals of plastic deformation.			
	Estimate the working loads for different forming methods			

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			Explain advanced technologies of forming metals into useful shapes
	Robotics & Manufacturing Automation	MPD2023	Evaluate the different mechanical configurations available for a modern industrial robot.
			Analyze complex robot kinematic theory and devise kinematic calculations for a given case study. Program an industrial robot off-line using kinematic simulation software to perform a specified task.
			Appraise the impact of automation, both economic and social, on modern industry and future applications in industry.
	Material Characterization & Failure Analysis	MPD2033	Interpret various materials characterization techniques.
			Select the characterization tool for specific application
			Analyze the characterization results by various equipment
			Analyze the reasons for failure and suggest remedial actions
	Supply Chain Management	MPD2073	Discuss and describe the key issues in SCM and logistic network.
			Demonstrate Bullwhip effect in SCM and Develop physical distribution strategies
			Decide the location of warehouses and Develop various inventory models based on risk and uncertainty.
			Design and develop strategic alliances like 3PL, supplier-retailer relationship
	Research Methodology & IPR	MPD2103	Formulate a research problem.
			Analyze research related information
			Prepare and present research proposal/paper by following research ethics
			Make effective use of computers and computing tools to search information, analyze information and prepare report
			Describe nature and processes involved in development of intellectual property rights and file a patent.
	CAM Lab	MPD2113	Develop sketches using suitable CAD software.
			Develop part models using suitable CAD software
			Develop Assembly model using suitable CAD software
			Develop 2D drawings using suitable CAD

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			software.
			Generate tool path and part program for plain milling operation
			Generate tool path and part program for pocket milling operation
			Generate tool path and part program for contour milling operation.
			Generate tool path and part program for turning operation.
	Software Proficiency-II	MPD2123	Develop/ select appropriate model required for simulation.
			Apply proper constraints and boundary conditions.
			Select suitable solver settings of simulation software.
			Apply different post processing techniques to interpret the results.
	: Mini Project	MPD2133	Identify structural engineering problems reviewing available literature
			Study different techniques used to analyze complex structural systems.
			Work on the solutions given and present solution by using his/her technique applying engineering principles.
	Industry Internship	MPD3013	Identify the real applications and practices of courses studied, at industry level
			Recognize various modeling, analysis and validation techniques adopted at industries
			Demonstrate the issues at design, manufacturing and assembly levels
			Summarize and present technical data in report format.
	Professional Skills Development – I	SH2511	Prepare professional image perception as reality.
			Develop personality traits.
			Strategize and develop skill to build self-esteem and positive attitude
			Imbibe integrity and ethics.
			Broaden think tanks on entrepreneurial skills.
			Apply English as a language for specific purposes.
Semester III	MOOC Course	MPD 3023	Identify the real applications and practices of courses studied, at industry level
			Recognize various modeling, analysis and validation techniques adopted at

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			industries.
			Demonstrate the issues at design, manufacturing and assembly levels
			Summarize and present technical data in report format.
	Dissertation Phase-I	MPD3033	Explain the contributions of various researchers in the field of design engg after carrying out literature survey from reputed journals
			Recognize the gap in the research and define a problem statement
			Explain significance and applicability of problem statement
			Summarize and present technical data in report format.
	Dissertation Phase-II	MPD3043	Outline the work plan for problem statement
			Identify the proper modeling and analysis tool
			Reproduce the preliminary results of problem statement
			Summarize and present technical data in report format
	Sem IV	Dissertation Phase-III	MPD4013
Select proper technique in solving the problem			
Compare the results with available literature			
Reduce given block diagram using block diagram algebra.			
Dissertation Viva-Voce		MPD4023	Design new methodology to address the problem
			Justify the results obtained from new methodology 3
			Write technical report and defend work